

WHAT IS CLAIMED IS:

1. A method of manufacturing an air intake apparatus that has an air intake passage portion constituting a path of flow of air introduced into an internal combustion engine, an opening formed in at least a part of the air intake passage portion for communicating outside and inside thereof, and a porous member for covering said opening, said method comprising steps of:

forming said opening in said air intake passage portion;

forming a holding portion projecting toward the outside of said air intake passage portion on an outer edge part of said opening;

temporarily fixing said porous member by inserting said porous member into said holding portion and by causing said holding portion to hold said porous member; and

joining said porous member and said holding portion during a state in which said porous member is temporarily fixed in said holding portion.

2. A method according to claim 1, wherein said holding portion is formed while extending along an outer edge of said opening and has a bottom holding part, which holds a part of a bottom surface of said porous member, and a side holding part that projects from an outer edge of said bottom holding part to outside of said air intake passage portion and that holds

at least a part of a side surface of said porous member, and wherein in said step of temporarily fixing, at least two surfaces of said porous member are held by said holding portion.

5           3.    A method according to claim 2, wherein in said step of temporarily fixing, a peripheral portion of said porous member is joined with said bottom holding part by welding.

          4.    A method according to claim 3, wherein said welding  
10 is performed by ultrasonic welding using an ultrasonic horn.

          5.    A method according to claim 1, wherein said holding portion is formed while extending along an outer edge of said opening and also has a bottom holding part that holds a part  
15 of a bottom surface of said porous member, a side holding part that projects from an outer edge of said bottom holding part to outside of said air intake passage portion and that holds at least a part of a side surface of said porous member, and a top holding part that projects from a projecting end of said  
20 side holding part and that extends in a direction of a diameter of said opening,

          wherein said bottom holding part, said side holding part, and said top holding part are disposed so that cross sections of said bottom holding part, said side holding part, and said  
25 top holding part are arranged in a substantially U-shaped

configuration in such a way as to have a groove part provided in an inner peripheral part of said holding portion, and

wherein in said step of fixing, said porous member is held in said porous member is held in said groove part of said holding  
5 portion.

6. A method according to claim 1, wherein said holding portion is formed while extending along an outer edge of said opening and also has a bottom holding part that holds a part  
10 of a bottom surface of said porous member, a side holding part that projects from an outer edge of said bottom holding part in such a way as to be inclined in a direction of a diameter of said opening.

15 7. A method according to claim 1, wherein in said step of joining, the joining of said porous member and said holding portion is performed by welding.

20 8. A method according to claim 1, wherein in said step of joining, the joining of said porous member and said holding portion is performed by thermal caulking.

9. A method according to claim 1, wherein said porous member is formed by thermoplastic resin fibers.

10. A method according to claim 9, wherein said porous member is formed by shaping a nonwoven fabric formed of said thermoplastic resin fibers.

5 11. An air intake apparatus comprising:

an air intake passage portion constituting a path of flow of air introduced into an internal combustion engine;

an opening formed in at least a part of said air intake passage portion for communicating outside and inside thereof;

10 a porous member for covering said opening; and

a holding portion projecting toward the outside of said air intake passage portion on an outer edge part of said opening,

wherein said holding portion has a substantially U-shaped cross section and also has a groove part provided in an inner peripheral part thereof; and

15 said porous member is joined and integrally formed with said holding portion so that a peripheral portion of said porous member is held in said groove part.

20 12. An air intake apparatus according to claim 11, wherein said porous member is formed by thermoplastic resin fibers.

13. An air intake apparatus according to claim 12, wherein said porous member is formed by shaping a nonwoven fabric formed  
25 of said thermoplastic resin fibers.